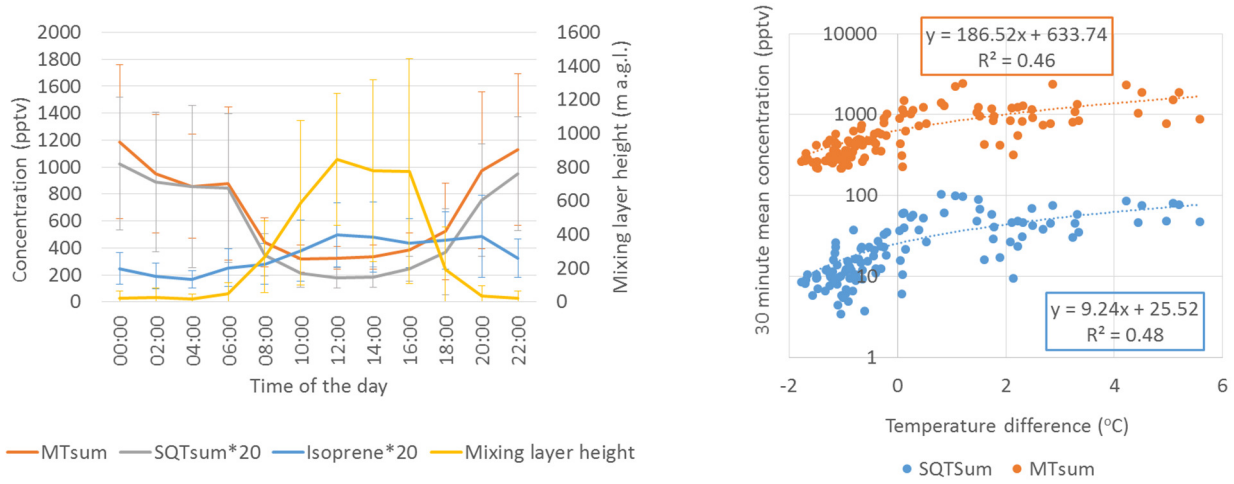

Figure S1. a) Mean diurnal variation of MT sum, SQT sum and isoprene concentrations (SQT sum and isoprene values were multiplied by 20 to get them into the same range as MT sum) and mean mixing layer height with standard deviations (error bars) and b) correlation of measured MT and SQT concentrations (N=115) with temperature difference between heights of 125 m and 4.2m at SMEAR II in July 2016.

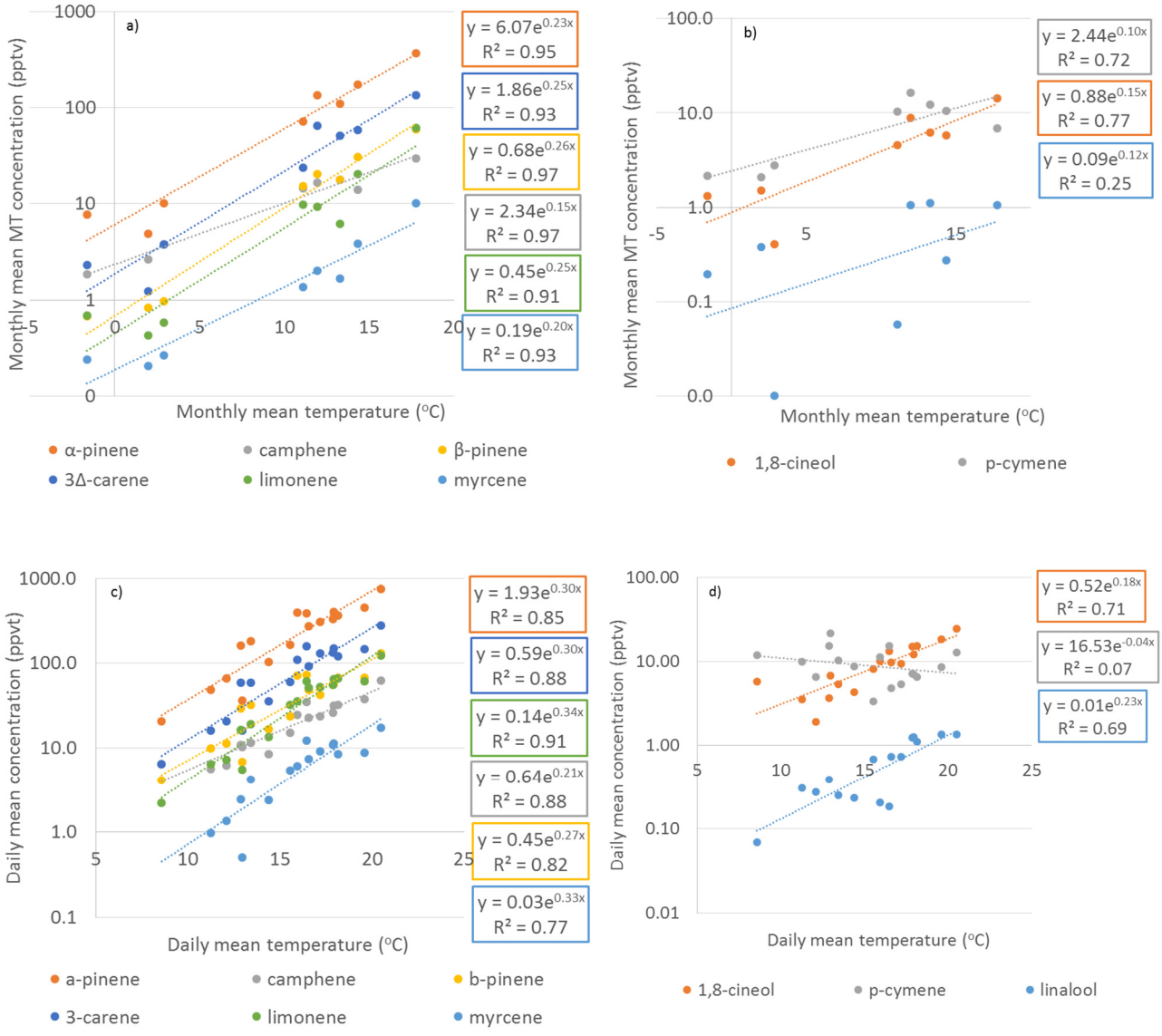

Figure S2. Exponential correlation of temperature with monthly means of individual MTs measured (Apr-Nov, a and b) and with daily means of individual MT concentrations in summer (June-Aug, c and d) in 2016 at SMEAR

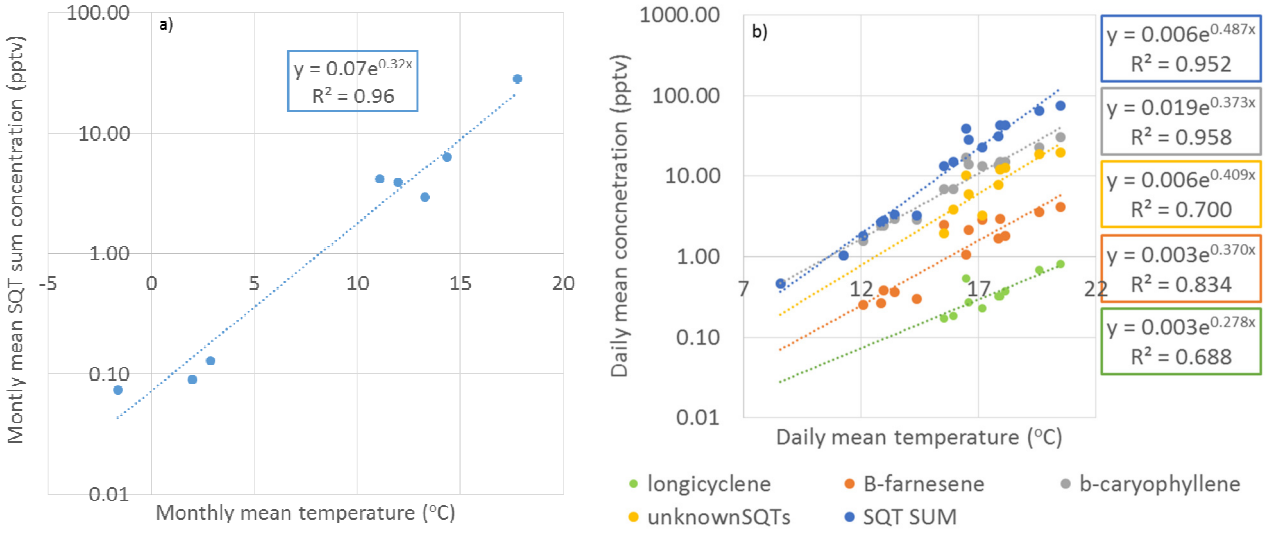

Figure S3. Exponential correlation of temperature with a) monthly mean (Apr-Nov) of SQT sum and b) daily means (Jun-Aug) of individual SQT concentrations at SMEAR II measured in 2016.

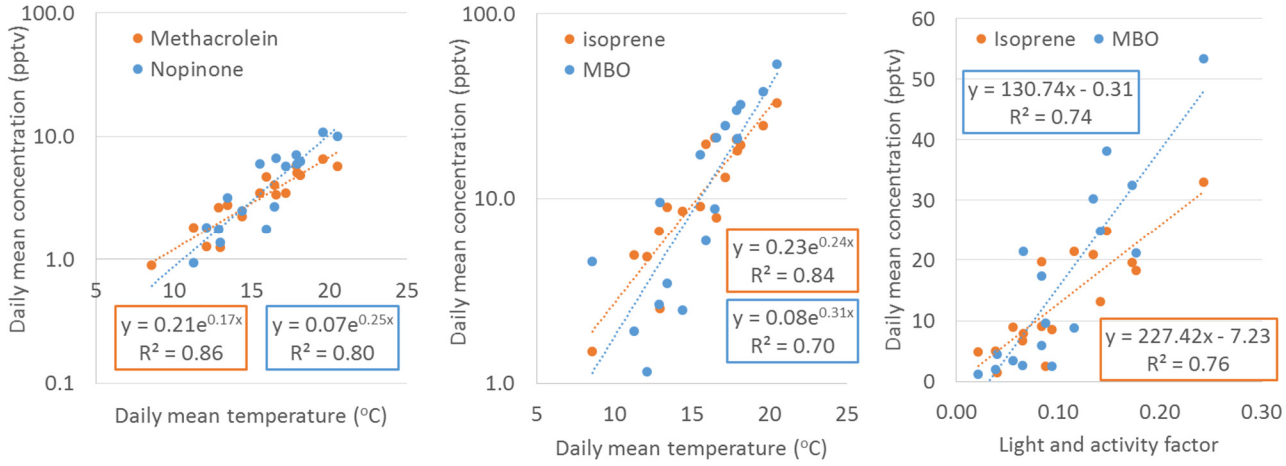

Figure S4. Exponential correlation of temperature with daily means of a) nopinone and methacrolein and b) isoprene and MBO concentrations. c) Exponential correlation of Isoprene and MBO daily mean concentrations with light and activity factor in summer (June-Aug) 2016 at SMEAR II.

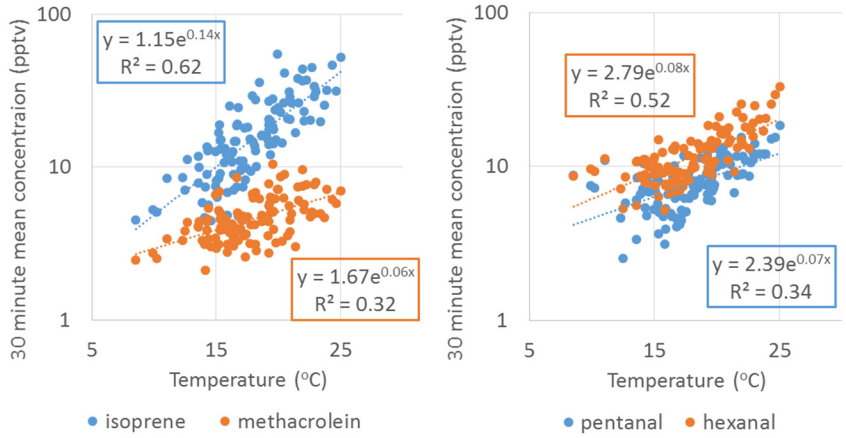

Figure S5. Temperature dependence of measured 30-minute mean concentrations of isoprene, methacrolein, pentanal and hexanal in July 2016.

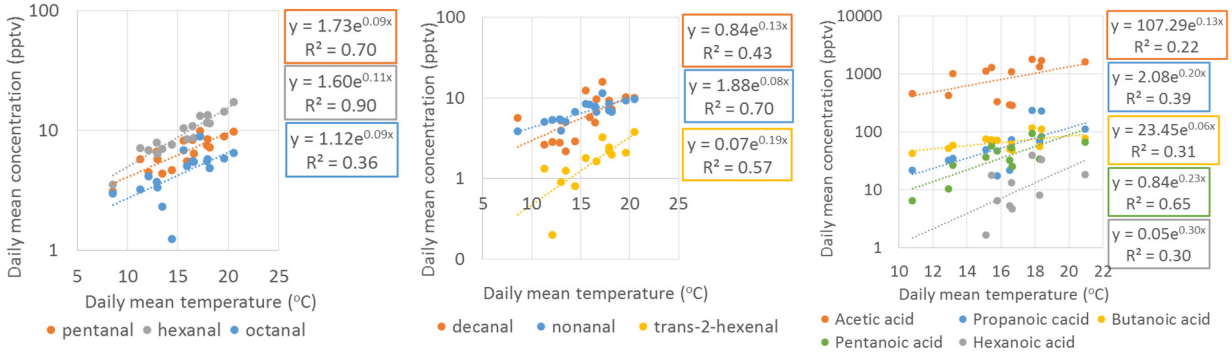

Figure S6. Exponential correlation of daily means of aldehyde and VOA concentrations with temperature in summer (June-Aug) 2016 at SMEAR II.

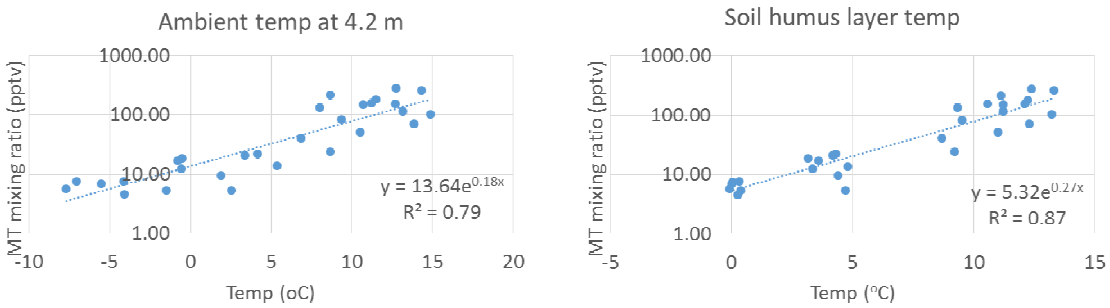

Figure S7. Exponential correlation of MTsum with ambient temperature (left) and soil humus layer temperature (right) in Autumn (Sep,Oct, Nov) 2016.

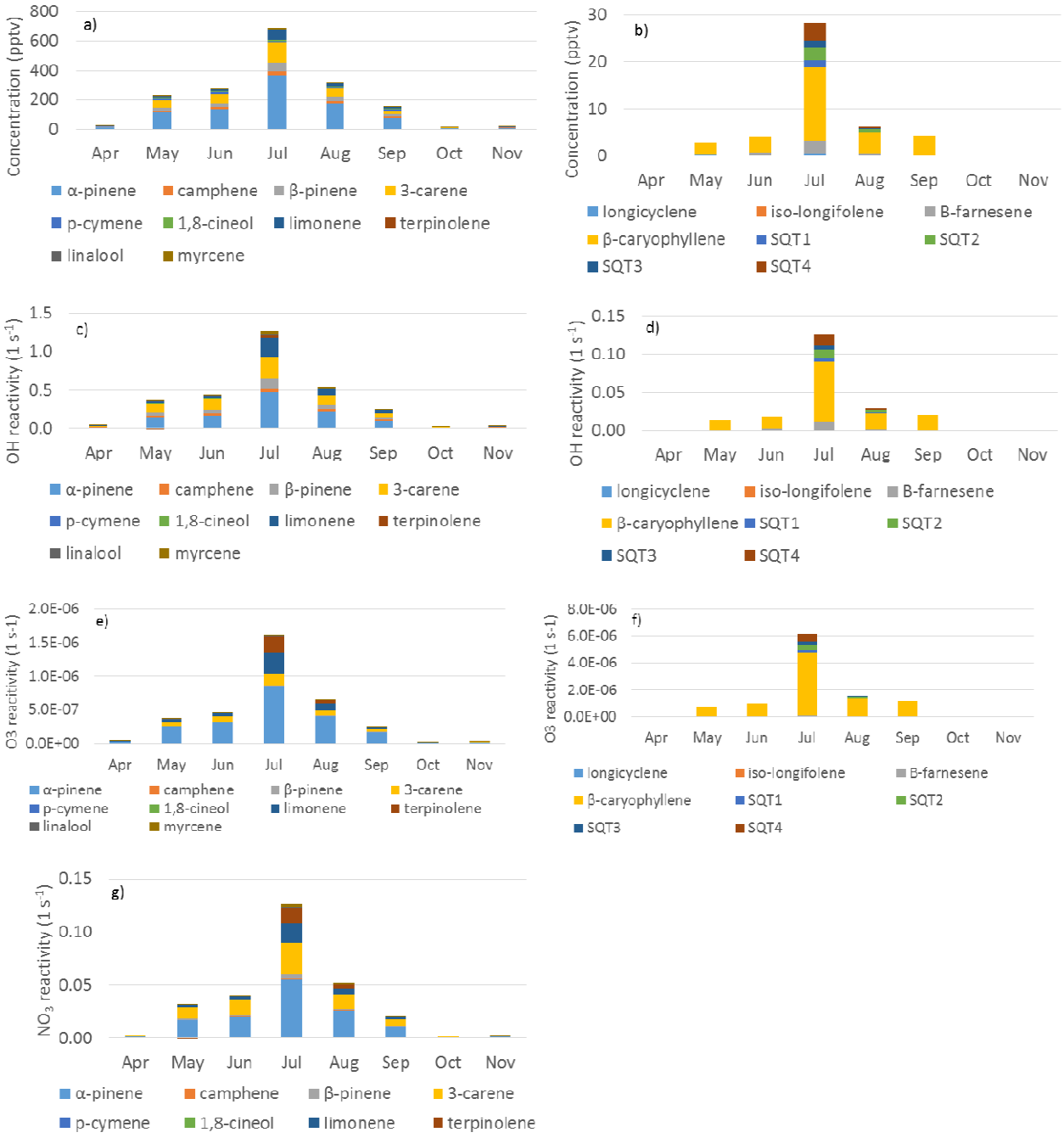

Figure S8. a) Concentrations of MTs, b) concentrations of SQTs, c) OH reactivity of MTs, d) OH reactivity of SQTs, e) O_3 reactivity of MTs, f) O_3 reactivity of SQTs and g) NO_3 reactivity of MTs

Table S1. Halo Stream Line scanning Doppler lidar specifications.

Wavelength	1.5 μm
Pulse repetition rate	15 kHz
Nyquist velocity	20 m s^{-1}
Sampling frequency	50 MHz
Velocity resolution	0.038 m s^{-1}
Points per range gate	10
Range resolution	30 m
Pulse duration	0.2 μs
Lens diameter	8 cm
Lens divergence	33 μrad
Telescope	monostatic optic-fibre coupled

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